Attached is a marked-up copy of the amended claims, as well as a clean copy of the complete set of pending claims as amended. No new matter is introduced by these amendments.

Remarks

Claims 2, 4-7, 9, 11, 38-54 and claim 62 were considered in the Office action of April 23, 2002. Claims 40-44, 46 and 47 were allowed. The remaining claims were rejected under 35 U.S.C. §§ 112 and/or 102. Claims 2, 4-7, 9, 11, 38, 39 and 48-49 have been cancelled. All of the claims rejected under 35 U.S.C. § 102 have been canceled, thereby obviating that basis for rejection. Applicants respectfully address the rejections under 35 U.S.C. § 112, first and second paragraphs inasmuch as they may apply to the claims as amended.

1. The Rejections Under 35 U.S.C. § 112, First Paragraph

Claim 45 was rejected under 35 U.S.C. § 112, first paragraph for lack of written description. In particular, the terms "variants" and "mutants" were said to be insufficiently described in the specification. Applicants have amended claim 45 to delete reference to those terms. As such, Applicants respectfully request that the rejection of Claim 45 under 35 U.S.C. § 112, first paragraph, be reconsidered and withdrawn.

2. The Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 45, 50 and 62 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, the terms "normal" and "mutant" in claims 45 and 50 were said to be vague. Applicants have amended claim 45, from which claim 50 depends, to delete reference to those terms. As such, Applicants respectfully request that the rejection of claims 45 and 50 under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

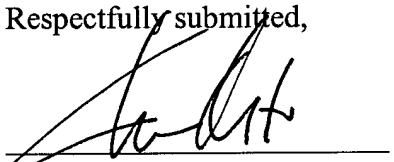
Claim 62 was rejected under 35 U.S.C. § 112, second paragraph because the term "functional domain" was said to be unclear because the function that was to be exhibited by the domain was not stated in the claim. Applicants have amended claim 62 to recite that the functional domain exhibits guanine nucleotide exchange factor activity in an *in vitro* assay. Applicants respectfully submits that claim 62 as amended clearly states the function of the

functional domain. As such, Applicants request that the rejection of claim 62 under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

Conclusion

Applicants respectfully submit that the claims are now in condition for allowance. If the Examiner believes that a conversation with Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at the telephone number below.

Respectfully submitted,



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CLAIM AMENDMENTS IN MARK-UP FORMAT

45. (Thrice Amended) An isolated nucleic acid as in claim 41 wherein said expression vector encodes at least a functional domain of [a protein selected from the group consisting of] an hcAMP-GEFII protein having the amino acid sequence of SEQ ID NO: 18[, a normal variant of said hcAMP-GEFII, and a mutant of said hcAMP-GEFII], wherein said functional domain of the [normal variant of said] hcAMP-GEFII protein exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.

50. (Thrice Amended) A host cell in culture, said host cell comprising an expression vector of any one of claims 41-47[49], or a descendant thereof, wherein said host cell is transformed *in vitro* with said expression vector.

62. (Amended) A method for producing at least a functional domain of an hcAMP-GEFII protein (SEQ ID NO: 18), said method comprising culturing a host cell of any of claims 50-54 under suitable conditions to produce said protein by expressing said nucleic acid, wherein said functional domain exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.

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1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

38. (Canceled)

39. (Canceled)

40. An isolated nucleic acid comprising a recombinant vector including a nucleotide sequence selected from the group consisting of SEQ ID NO: 17, and a sequence complementary to SEQ ID NO: 17.

41. An isolated nucleic acid as in claim 40 wherein said vector is an expression vector and said nucleotide sequence is operably joined to a regulatory region.

42. (Amended) An isolated nucleic acid as in claim 41 wherein said expression vector may express said nucleotide sequence in mammalian cells in culture.

43. (Amended) An isolated nucleic acid as in claim 42 wherein said cells in culture are selected from the group consisting of fibroblast, liver, kidney, spleen, bone marrow, and neurological cells.

44. An isolated nucleic acid as in claim 42 wherein said vector is selected from the group consisting of vaccinia virus, adenovirus, retrovirus, neurotropic viruses, and Herpes simplex.

45. (Thrice Amended) An isolated nucleic acid as in claim 41 wherein said expression vector encodes at least a functional domain of an hcAMP-GEFII protein having the amino acid sequence of SEQ ID NO: 18, wherein said functional domain of the hcAMP-GEFII protein exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.

46. An isolated nucleic acid as in claim 41 wherein said vector further comprises sequences encoding an exogenous protein operably joined to said nucleotide sequence and whereby said vector encodes a fusion protein.

47. An isolated nucleic acid as in claim 46 wherein said exogenous protein is selected from the group consisting of lacZ, trpE, maltose-binding protein, poly-His tags, and glutathione-S-transferase.

48. (Canceled)

49. (Canceled)

50. (Thrice Amended) A host cell in culture, said host cell comprising an expression vector of any one of claims 41-47, or a descendant thereof, wherein said host cell is transformed *in vitro* with said expression vector.

51. (Amended) A host cell in culture as in claim 50 wherein said host cell is selected from the group consisting of bacterial cells and yeast cells.

52. (Amended) A host cell in culture as in claim 50 wherein said host cell is selected from the group consisting of fetal cells, embryonic stem cells, zygotes, gametes, and germ line cells.

53. (Amended) A host cell in culture as in claim 50 wherein said cell is selected from the group consisting of fibroblast, liver, kidney, spleen, bone marrow and neurological cells.

54. (Amended) A host cell in culture as in claim 50 wherein said cell is an invertebrate cell.

62. (Amended) A method for producing at least a functional domain of an hcAMP-GEFII protein (SEQ ID NO: 18), said method comprising culturing a host cell of any of claims 50-54 under suitable conditions to produce said protein by expressing said nucleic acid, wherein said functional domain exhibits guanine nucleotide exchange factor activity in an *in vitro* assay.

118. (Canceled)

119. (Canceled)

120. (Canceled)